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EVALUATION OF TRIMARC PROCUREMENT PROCEDURES (Final Report)



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EVALUATION OF TRIMARC PROCUREMENT PROCEDURES
(Final Report)

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in cooperation with

Kentucky Transportation Cabinet
Commonwealth of Kentucky

and

Federal Highway Administration
U.S. Department of Transportation

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16. Abstract An Advanced Traffic Management System (ATMS), referred to as TRIMARC (Traffic Response and Incident Management Assisting the River Cities), was installed in the Louisville, Kentucky and southern Indiana area beginning in the summer of 1998. A system integrator approach was used for the installation, operation, and maintenance of this system. The system integrator approach involved using Special Experimental Project No. 14 (SEP-14) procedures to procure the services of an equipment installation contractor. The SEP-14 process is an innovative means of procuring projects that may be uncharacteristic to the traditional projects normally encountered by highway departments. SEP-14 provides an opportunity to use and evaluate the contractual arrangements when an alternate process is more beneficial than the traditional process. In this case, selection of the equipment installation contractor was based on criteria other than cost. The SEP-14 process allowed the equipment installation contract to be based on cost, schedule, and experience/past performance. The objective of this study was to evaluate the effectiveness and success of the TRIMARC project including the SEP-14 process. The overall project has been received positively and the contract is now being extended to include a larger incident management program. The SEP-14 process has provided the system integrator more flexibility with such aspects as receiving the specific equipment desired and contracting with an equipment installation contractor that had previous experience with similar projects. This resulted in time and cost savings to Kentucky and Indiana.			
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EXECUTIVE SUMMARY

Innovative practices in construction contracting techniques have become more frequent and necessary in recent years. These practices benefit the transportation industry by experimenting with methods different from the traditional methods. This allows for growth and the adoption of procedures that provide higher quality and a better benefit to cost ratio.

An Advanced Traffic Management System (ATMS), referred to as TRIMARC (Traffic Response and Incident Management Assisting the River Cities), was installed in the Louisville, Kentucky and southern Indiana area. A system integrator approach was used for the installation, operation, and maintenance of this system. Special Experimental Project No. 14 (SEP-14) procedures were used to procure the services of the equipment installation contractor. An evaluation was conducted to determine the effectiveness of the process approved for this procurement. This evaluation was accomplished by review of documentation related to the TRIMARC project including contracts, memorandums, and proposals. Also, input was received from the principal participants in the project including representatives of the Kentucky Transportation Cabinet, HNTB, Spartan Construction Company, and TRW, Inc.

The SEP-14 process is an innovative means of procuring projects that may be uncharacteristic to the traditional projects normally encountered by highway departments. SEP-14 provides states an opportunity to use and evaluate the contractual arrangements when an alternate process is more beneficial than the traditional processes. After some time period, this alternate process may be evaluated by the Federal Highway Administration to determine if it should be classified operational instead of experimental.

The evaluation on the TRIMARC project's use of the system integrator and SEP-14 bidding practices has been very positive. The project initially encountered some delays; however, progressed in a manner that was satisfactory to all parties involved. The overall project has been received positively and the contract has now being extended twice to include a larger area for the incident management program. The SEP-14 process has provided the system integrator more flexibility and has allowed the procurement of the equipment and services to be based on criteria other than cost. This has allowed the system integrator to receive the specific equipment desired and to contract for the equipment installation from a contractor that had previous experience with similar projects resulting in time and cost savings to Kentucky and Indiana.

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1.0 INTRODUCTION AND BACKGROUND

Traffic congestion continues to be a major concern in metropolitan areas. Incidents, such as traffic crashes or disabled vehicles, can disrupt traffic flow causing major delays for motorists. Costs of more than \$16 billion and more than 2 billion hours annually are the effects of such delays for motorists¹. Therefore, the need for effective Advanced Traffic Management System (ATMS) programs is growing. ATMS programs include preplanned and coordinated incident management procedures to detect and remove incidents and restore roadway capacity as quickly and safely as possible. ATMS programs include an array of strategies to improve incident detection and verification, response time, site management, clearance time, and motorist information.

In 1994, a study by HNTB in association with Presnell Associates Inc. provided short and long range recommendations for an ATMS in metropolitan Louisville, Kentucky. The study included a concept plan for a freeway incident management plan to serve I-65 from Fern Valley Road in Kentucky to State Route 311 in Indiana. This section includes the Kennedy Bridge, a six-lane structure that is one of only three that link Louisville to Southern Indiana. Also included in this study was a section of I-264 (Watterson Expressway).

The Kentucky Transportation Cabinet (KYTC) in conjunction with the Indiana Department of Transportation (INDOT) used the HNTB study as a guide to develop a proposal for the design of an ATMS program. The program is referred to as TRIMARC (Traffic Response and Incident Management Assisting the River Cities). In September 1995, a contract was signed with TRW, Inc. for the design of the ATMS program. In September 1996, before the design of the ATMS was completed, TRW submitted an unsolicited proposal to privatize the installation and operation of the project. The KYTC does not have procedures for accepting unsolicited proposals; therefore, in March 1997, a Request for Proposal (RFP) was issued. TRW was the only responder and was awarded a contract for the integration, installation, operation, and maintenance of the TRIMARC project. Under this contract, TRW was to procure all equipment and services in compliance with federal regulations. TRW used the process submitted by KYTC and approved by FHWA under Special Experimental Project No. 14 (SEP-14) to procure a contractor for equipment and its installation. The Federal Highway Administration SEP-14 is used for any construction contracting techniques which deviate from the competitive bidding provisions in the United States Code Title 23 Section 112. In April 1998, Spartan Construction Company was awarded the contract based on a point-award system for cost, schedule, and past performance/experience. This work was referred to as Phase One.

In September 1999, Spartan Construction Company completed the contract work for Phase One. The contract was then amended by change order to include additional work. This change order was referred to as Increment One. Increment One allowed more work to be completed under the same unit pricing as the original contract and

¹ HNTB and Presnell Associates Inc. *I-65 Freeway Incident Management Study*. June 1994.

expanded the TRIMARC coverage area. Increment One was completed in September 2000. Figure 1 depicts the TRIMARC coverage area.



Figure 1. Map of TRIMARC area

In April 2001, another change order was issued for Increment Two. This increment also expanded the coverage area with similar technologies as previous and, at present, is still ongoing. The expected completion date of Increment Two is September 2001. A timeline of the events is depicted in Figure 2.

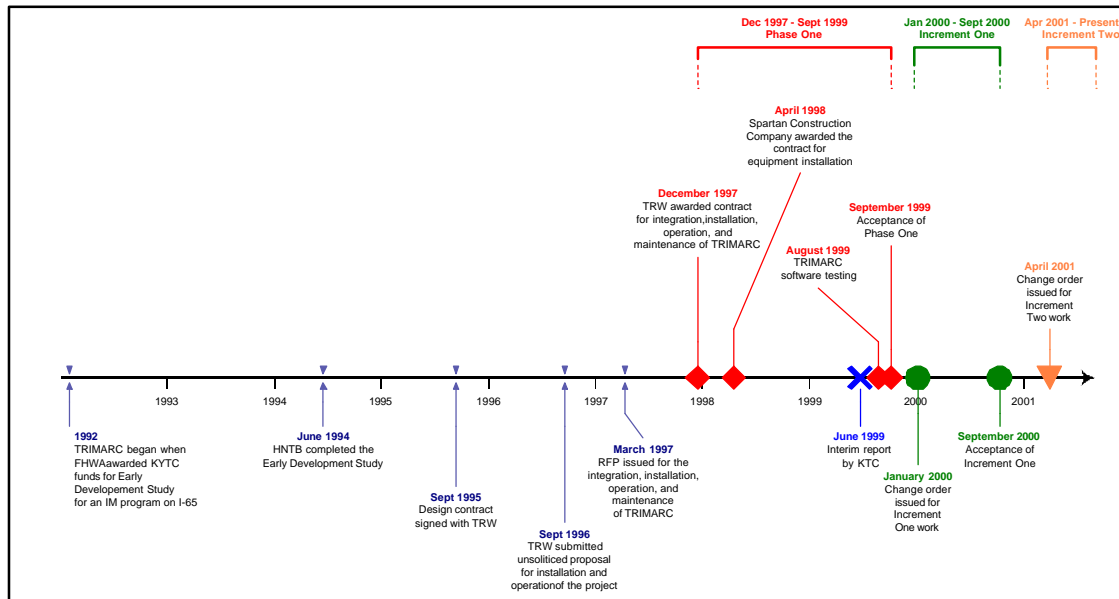


Figure 2. Timeline of TRIMARC events

2.0 OVERVIEW OF PROCUREMENT PROCEDURES

There are a number of options to contract for services necessary to develop and implement Intelligent Transportation System (ITS) projects. Construction projects could involve traditional planning, design, and maintenance phases in their development. Non-traditional types of contracts that have been successfully utilized to develop and implement ITS projects include retaining a system integrator and/or a system manager.

2.1 Traditional Low-Bid Procurement of Contractor Services

The traditional procurement procedures for construction performed by the state highway department or construction under its supervision follow United States Code Title 23 Section 112 “Letting of Contracts”². This code is presented in Appendix A. In these cases, a request for submission of bids is made by advertisement unless the FHWA approves some other method of procurement. Contracts for the construction of each project are awarded only on the basis of the lowest responsive bid submitted by a bidder that meets the established criteria of responsibility. Section 112 reads:

² “Letting of Contracts.” Title 23 *United States Code* Section 112. N.D. Online. Available: <http://www.access.gpo.gov/uscode/uscmmain.html>.

“...construction of each project...shall be performed by contract awarded by competitive bidding , unless the State highway department demonstrates, to the satisfaction of the Secretary, that some other method is more cost effective or that an emergency exists. Contracts for the construction of each project shall be awarded only on the basis of the lowest responsive bid submitted by a bidder meeting established criteria of responsibility.”

Contracts for program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services are negotiated under Title IX of the Federal Property and Administrative Services Act of 1949 or equivalent state qualifications-based requirements³.

2.2 System Manager Procedure

The system manager is retained to work on behalf of and in coordination with the agency involved in the ITS project. This type of contract typically provides professional staff with special skills, experience and resources that a state may not have to successfully facilitate the completion of a particular ITS project. The system manager would then work directly with contractors on different contracts to complete the development or implementation of the ITS project. The system manager does not, however, exercise control over the type of equipment being used. This can create problems because the system manager is ultimately responsible for the project even though there are limitations in the selection and operational characteristics of equipment being used.

2.3 System Integrator Procedure

The system integrator procedure is similar to the system manager procedure except the system integrator has been granted the authority to procure both services and equipment. The responsibility of a system integrator typically involves integration of software with the monitoring and control equipment required for a system. The software includes the development of all central facility software. The central facility software also requires the selection, procurement, configuration, and installation of all hardware needed to provide the functionality of whatever system is being implemented. The integrator is usually required to test the central computer system and related field hardware to provide the required functionality. This is to ensure that the software, monitoring and control equipment development work is coordinated with related work that other contractors may be performing. The system integrator is also responsible for advertising, evaluating, and recommending contractors for particular aspects of the project. If the system integrator concept involves the procurement of an ITS system that meets the definition of construction, the SEP-14 process must be followed if federal funds are used to obtain approval of the procurement method specified for the project.

³ United States. Cong. House. *Federal Property and Administrative Services Act of 1949*. Title IX Federal Government Selection of Architects and Engineers. Public Law 92-582. 92nd Cong., H.R. 12807. 27 Oct 1972. Online. Available: <http://acec.org/programs/brooks.html>.

3.0 SPECIAL EXPERIMENTAL PROJECT NO. 14

The Federal Highway Administration Special Experimental Project No. 14 (SEP-14) is used for any construction contracting techniques which deviate from the competitive bidding provisions in the United States Code Title 23 Section 112. Any federally funded construction contract that utilizes a method of award other than the lowest responsive bid is to be evaluated under SEP-14. These non-traditional contracting techniques may include best value, life cycle cost bidding, qualifications based bidding, and other methods where cost and other factors are considered in the award process. While the FHWA has not defined the weighting criteria for cost in a state's award procedures, a state must utilize cost as one of the award criteria in order to have a competitive process under SEP-14.

The purpose of SEP-14 is to evaluate "project specific" innovative contracting practices that have the potential to reduce the life cycle cost of projects while at the same time maintaining product quality. The most common "project specific" innovative contracting techniques include cost-plus-time bidding, lane rental, design-build contracting, and warranty clauses. However, there have been several other SEP-14 approvals such as life cycle cost procurement, lump sum bidding, indefinite quantity/indefinite delivery, alternate pavement type bidding, no excuses bonuses, price/qualifications-base bidding, constructability reviews, and system integrator contracts. Several of these are listed and described in Appendix B.

3.1 SEP-14 Application to TRIMARC Project

On January 28, 1998, the FHWA approved the proposal by the KYTC to use the system integrator contracting procedure on the TRIMARC ATMS project. A copy of the documentation describing general work plan requirements using the SEP-14 process is attached as Appendix C. TRW, as the system integrator, was responsible for construction management, project supervision, and system integration. The contract between the KYTC and TRW included the provision for TRW to contract for equipment and its installation utilizing evaluation factors in addition to cost. This type of contracting is permitted under the SEP-14 process. The SEP-14 application allows for the contract to be awarded on the basis of "best value" rather than the traditional low-bid. The bidding process was based on a point system for cost, schedule, and past experience/performance.

4.0 TRIMARC CONTRACTUAL ARRANGEMENTS

4.1 Unsolicited Proposal by TRW

The KYTC contracted with TRW to perform the design of the ATMS for the TRIMARC project. Before the design of the ATMS was completed, TRW submitted an unsolicited proposal to privatize the installation and operation of the project. The KYTC

does not have procedures for accepting unsolicited proposals; therefore, the unsolicited proposal was not accepted.

4.2 The Professional Services Contracting Process by KYTC to Select System Integrator

After rejecting the unsolicited proposal, the KYTC issued a RFP for the TRIMARC project to provide system integration for the ATMS system in metropolitan Louisville. The only respondent to the RFP was TRW. A 10-year contract was signed between TRW and KYTC for the freeway incident management services. A renewal option is available at the completion of the 10 years.

4.3 SEP-14 Process to Select Equipment Installation Contractor

TRW solicited bid proposals for the installation of TRIMARC equipment from KYTC and INDOT pre-qualified contractors using the approved SEP-14 process. There was a Source Selection Committee comprised of TRW members that led the selection of the equipment contractor. There was also a Bidding/Oversight Selection Committee comprised of KYTC, Kentucky Transportation Center, and FHWA members that was present at the bid opening. The deadline for the proposals was March 18, 1998 and no bids were received after the deadline. All proposals were evaluated for responsiveness to the bid instructions and technical compliance and deficiencies were noted. The Source Selection Committee evaluated the pricing submitted by the bidder for correctness of extended price and total price relevant to the engineer's estimate. They evaluated the experience and past performance by the bidders to ascertain their respective level of relevant experience. They also reviewed submitted proposed schedules for reasonableness and impact on construction inspection and engineering. After the first round of evaluation, deficiency reports and clarification requests were issued to each bidder as necessary. The bidders then submitted their "best and final" offer to TRW. The Source Selection Committee reported their scoring and recommendations on April 2, 1998 to the Bidding/Oversight Selection Committee. The contract award was on April 3, 1998.

The procurement schedule of events consisted of the following:

Mandatory Bidders Conference	February 23, 1998
Initial Submittal	March 18, 1998
TRW Bid Analysis	March 18-24, 1998
Request for Best and Final Proposal	March 25, 1998
Proposal Due	April 1, 1998
Announcement of Apparent Winner	April 3, 1998

4.3.1 Description of TRW Procedure for Selecting TRIMARC Equipment Installation Contractor

Twenty-four companies attended the bidder's conference for the TRIMARC equipment installation contract. Only three of the twenty-four companies submitted a proposal bid. These companies included Spartan Construction, Apex Contracting, and TransTech. The proposals were rated on a point system for cost, schedule, and experience/past performance. The cost and schedule areas were rated relevant to the engineer's estimate.

Cost was scored in the following manner: All bidders started with 100 points. Bids that exceeded the engineer's estimate were decremented by one point for each \$20,000 increment by which their bid was higher. Bids that were less than the engineer's estimate were incremented one point for each \$20,000 (or part of \$20,000) increment by which their bid was lower.

Schedule was scored in the following manner: All bidders started with 30 points. Bidders whose schedules exceeded the engineer's schedule were decremented one point for every week increment by which they exceeded. Bidder's schedules which were projected to be completed sooner than the engineer's schedule were incremented one point for every week increment prior to the engineer's schedule completion.

Experience and past performance were scored in the following manner: for experience, the bidders were ranked on their demonstrated work on similar ITS roadway projects within the last five years. The bidder with the most experience was ranked first and received 10 points. The next most experienced bidder received nine points, and so on. If in the judgement of the evaluators, there were no discernible differences in experience levels of more than one bidder, the same number of points were awarded to each of the tying bidders. The next ranked bidder received only one less point. Past performance was scored in the same manner as experience. Each bidder's past performance was evaluated on the ability to perform on schedule, on budget, and on the ability to work with its customers on similar type projects within the last five years.

The points for each area for the three companies involved in the bidding process are listed in Table 1. All three companies were equal in related experience and schedule. Spartan and TransTech were equal in past performance; however, Apex had fewer points in this category. In the cost category, Spartan proposed a lower cost than the other companies followed by TransTech and Apex, respectively. When the companies were asked to submit their "best and final" bids, Apex Consulting withdrew their bid proposal citing DBE content and scheduling problems. Spartan Construction and TransTech were identical in all areas except cost. Spartan Construction had the lower cost, therefore, receiving more points. Spartan was awarded the contract based on these results on April 3, 1998.

Scoring Summary			
Category	Apex	Spartan	TransTech
Past Performance	9	10	10
Related Experience	10	10	10
Schedule	30	30	30
Cost	60	130	115
TOTAL	109	180	165

Table 1. Equipment Contractor Scoring Summary

4.3.2 Advantages and Disadvantages of the System Integrator Process

The FHWA has expressed the intent to encourage the use and evaluation of all promising innovative contracting practices by state highway agencies and others that fall within the flexibility of the Federal-aid program requirements. The success of practices evaluated under SEP-14 requires the cooperation, support, and commitment of all those involved. The FHWA has noted that with the support of the entire industry, this initiative to promote innovative contracting practices can foster positive changes to our traditional ways of doing business and result in worthwhile improvements that will benefit the nation's highway users.

There are several advantages to the system integrator process for awarding contracts. These include the following:

- The contract award is based on criteria, other than low bid, which generally results in better quality work and more experienced contractors for a project.
- This type of bidding assures that the contractor is capable of providing the services that are expected for a project.
- On this project, there was a two-bid process that allowed the bidder to correct a bid due to pricing errors and resubmit without being assessed a penalty or having to withdraw. For a traditional Federal-aid bidding process, the

contracting agencies would not receive a final bid quantity list until 30 days after the contract was awarded. If the equipment does not meet the agency's standards there could be a delay in the project in order to get other equipment.

- The KYTC SEP-14 approval allowed the system integrator to approve the equipment and identify technical non-compliance for all the bidders before the contract was awarded. This process gave the agencies the best quality and cost-effective product.
- The system integrator approach allowed project approvals to be made sooner since only one entity was involved. This reduced the length of delays considerably.

There were also a few noted disadvantages to the system integrator process that may need to be addressed in future contracts of this type. These include the following:

- Under KYTC's professional service procurement requirements, profit may only be taken on a consultant's labor costs. Normally, ITS projects require a consortium of consultants to provide the needed specialized skills including project management, software engineers, electrical engineers, civil engineers, and many others. There is also the need to meet DBE/MBE participation goals. While there is a single point of responsibility, profit on the overall value of the work is not allowed. The result is responsibility for large contracts but with the ability to only claim a small percentage of the total amount as labor profit. The current procedure for assessing profit fees does not appear to take into consideration the risks assumed by consultants in managing this type of contract. Additional research and evaluation may be needed to develop a profit model that is fair to all parties involved. It should be based on the size, complexity, and risks associated with the project and not just the labor content.
- The procurement procedure used for the equipment installation contract also needs to be addressed. The subjectivity associated with the evaluation of Past Performance and Related Experience is a weakness. More objective means of scoring these categories should be developed with more input from the Oversight Committee and/or Evaluation Team.
- The method of scoring the cost should be reviewed and consideration given to awarding partial points for partial increments of \$20,000. The bidder's score was increased or decreased one point for each \$20,000 increment by which their bid was higher or lower than the engineer's estimate. For example, a bid \$1,000 lower or \$20,000 lower than the engineer's estimate would be awarded one additional point. Likewise, a bid that was \$1,000 higher or \$20,000 higher than the engineer's estimate would lose one point.

5.0 DESCRIPTION OF SPARTAN CONSTRUCTION COMPANY CONTRACT FOR EQUIPMENT INSTALLATION

5.1 Tasks and Phases Required for Spartan Construction Company

Spartan Construction Company was awarded the contract for equipment installation for the TRIMARC project. This contract consisted of furnishing and installing the ITS traffic control equipment including variable message signs, closed circuit video equipment, radar vehicle detectors, traffic control cabinets, traffic controllers, loop detectors, piezoelectric detectors, and equipment panels. This equipment covered an area of 11 miles. In addition, Spartan was also required to test the equipment and provide equipment software documentation and training. All tasks for the initial contract, Phase One, have been completed.

Increment One work was an amendment to the original contract and included much of the same type of installations. This work added another 11 miles of coverage and included variable message signs, closed circuit video equipment, reference markers, and detectors.

Increment Two work was also an amendment to the original contract and will only include closed circuit video equipment.

5.2 Contract Costs and Schedule

TRW supplied an engineer's estimate for the schedule and cost of the proposed bid. Spartan kept the engineer's schedule as the proposed work schedule but proposed a lower cost. The schedule was to begin on the contract award date and be completed in early November 1998. The contract cost was approximately \$5.46 million.

Spartan encountered several delays in the project; however, based on discussions with Spartan, TRW, and KYTC, the problems were beyond the control of Spartan. Weather delayed the project for three weeks during the summer of 1998. There was also a problem with the pole provider not having a compliant product. The pole provider originally committed to providing a pole that met the desired specifications; however, the actual pole did not meet these standards. This caused a delay of 10 weeks because no foundation work could be performed without the proper bolts for the selected poles.

The variable message signs (VMS) were not subject to the initial schedule because the trusses could not be designed until the VMS geometry (dimensions, weight, door and vent locations, etc.) was known. All original bidders on TRIMARC were to provide the truss at cost plus a percent profit that was declared in the bid process and evaluated uniformly by TRW using an estimated price. A firm fixed unit price was used for the installation costs of the structure. Once the geometry was known, a competitive bid process was sought through Spartan. The low bidder with the best schedule was chosen to fabricate the trusses. This delay projected the schedule into 1999.

The original contract, called Phase One, was completed in September 1999. The contract was amended to include additional work called Increment One. This additional work extended the coverage area an additional 11 miles. The cost for Increment One was \$2 million and was completed in September 2000. Increment Two started in April 2001 and the estimated completion date is September 2001. The approximate cost is \$750,000. For both Increments, the unit pricing for the equipment remained the same except when newer products were desired. It should be noted that contractors providing equipment may be penalized because unit pricing stays the same regardless of the quantities and supplemental installations are typically smaller quantities. However, there are cost savings for the contractor resulting from not repeating the bidding process.

6.0 ASSESSMENT OF IMPACT OF CONTRACT ARRANGEMENTS ON SPARTAN CONSTRUCTION COMPANY'S ABILITY TO ACCOMPLISH OBJECTIVES

Spartan's contractual agreement with TRW appeared to be successful in all aspects of the project. There were delays in the project but those were documented to have been beyond the control of Spartan. Spartan's work was of good quality and a team relationship appears to have been built between TRW and Spartan. There were also positive aspects of the resident engineer/inspector role assumed by representatives of HNTB Consulting. It was noted that with the system integrator process there were no obvious differences between the role of HNTB as compared to the traditional contracts where KYTC representatives serve in this role. The tasks were completed with ease due to the arrangement of the system integrator approach. Necessary approvals for Spartan were quick since only one approval from TRW was needed. Weekly meetings were held between the participating parties in order to address situations before they became major problems/delays. All the parties contributed to the project by using their past experience and knowledge, eliminating problems that had already been encountered on other similar projects. This team approach and cooperative process has helped to ensure a successful project.

7.0 FUNDING AND PAYMENTS

The TRIMARC project is funded with federal CMAQ (Congestion Management of Air Quality) funds. Both Kentucky and Indiana share the cost. The initial payments for the integration and installation are from a master lease arrangement through GE Capital Public Finance, Inc. (GECPPF). The lease payments are funded through CMAQ. The maintenance and operations are funded through CMAQ. The benefits of utilizing the master lease program of GECPPF are speed and simplicity. This type of financing is an innovative process that reduces delays due to slow cash flow or limited funding and also speeds up the project development.

Bookkeeping of payments is completed through the Kentucky Construction and Engineers Management Program Version II (KYCEMPPII). This program allows contractors to enter bid items, prices, and other relevant information into their computer for completed phases of the project. The program then totals the amounts and produces a contract payment form to be submitted to TRW for verification and forwarded on to KYTC for payment. The result has been a smooth payment process that appears to have been agreeable to TRW, Spartan, and other equipment subcontractors.

8.0 OVERALL ASSESSMENT OF THE SYSTEM INTEGRATOR PROCESS AS APPLIED TO TRIMARC

TRIMARC has been successful in the integration and installation tasks of the incident management project. The contract method allowed TRW to obtain an equipment installer based on the quality of work and related experience instead of just a low bid proposal. The result was a reduction in the amount of possible delays since the contractor had to demonstrate experience relevant to this type of innovative work. The previous experience of the contractor, who was also the equipment installation contractor for the ARTIMIS (Advanced Regional Traffic Interactive Management and Information System) project in Cincinnati and northern Kentucky, was utilized to reduce costs and lend practical ideas to the project based on past experience. The cost of the project did not exceed the engineer's estimate. The weekly meetings promoted team involvement and reduced conflicts and liquidated damages because the lines of communication were open. Due in part to the good relationship of the parties involved, the contract continues to be extended to include larger traffic areas around Louisville; as noted in the discussion of project expansions through Increments One and Two.

9.0 APPENDIX A

United States Code Title 23 Section 112 “Letting of Contracts”

TITLE 23--HIGHWAYS

CHAPTER 1--FEDERAL-AID HIGHWAYS

SUBCHAPTER I--GENERAL PROVISIONS

Sec. 112. Letting of contracts

(a) In all cases where the construction is to be performed by the State transportation department or under its supervision, a request for submission of bids shall be made by advertisement unless some other method is approved by the Secretary. The Secretary shall require such plans and specifications and such methods of bidding as shall be effective in securing competition.

(b) Bidding Requirements.—

(1) In general.--Subject to paragraph (2), construction of each project, subject to the provisions of subsection (a) of this section, shall be performed by contract awarded by competitive bidding, unless the State transportation department demonstrates, to the satisfaction of the Secretary, that some other method is more cost effective or that an emergency exists. Contracts for the construction of each project shall be awarded only on the basis of the lowest responsive bid submitted by a bidder meeting established criteria of responsibility. No requirement or obligation shall be imposed as a condition precedent to the award of a contract to such bidder for a project, or to the Secretary's concurrence in the award of a contract to such bidder, unless such requirement or obligation is otherwise lawful and is specifically set forth in the advertised specifications.

(2) Contracting for engineering and design services.--

(A) General rule.--Each contract for program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services with respect to a project subject to the provisions of subsection (a) of this section shall be awarded in the same manner as a contract for architectural and engineering services is negotiated under title IX of the Federal Property and Administrative Services Act of 1949 or equivalent State qualifications-based requirements.

(B) Applicability.--

(i) In a complying state.--If, on the date of the enactment of this paragraph, the services described in subparagraph (A) may be awarded in a State in the manner described in subparagraph (A), subparagraph (A) shall apply in such State beginning on such date of enactment.

(ii) In a non-complying state.--In the case of any other State, subparagraph (A) shall apply in such State beginning on the earlier of (I) August 1, 1989, or (II) the 10th

day following the close of the 1st regular session of the legislature of a State which begins after the date of the enactment of this paragraph.

(C) Performance and audits.--Any contract or subcontract awarded in accordance with subparagraph (A), whether funded in whole or in part with Federal-aid highway funds, shall be performed and audited in compliance with cost principles contained in the Federal Acquisition Regulations of part 31 of title 48, Code of Federal Regulations.

(D) Indirect cost rates.--Instead of performing its own audits, a recipient of funds under a contract or subcontract awarded in accordance with subparagraph (A) shall accept indirect cost rates established in accordance with the Federal Acquisition Regulations for 1-year applicable accounting periods by a cognizant Federal or State government agency, if such rates are not currently under dispute.

(E) Application of rates.--Once a firm's indirect cost rates are accepted under this paragraph, the recipient of the funds shall apply such rates for the purposes of contract estimation, negotiation, administration, reporting, and contract payment and shall not be limited by administrative or de facto ceilings of any kind.

(F) Prenotification; confidentiality of data.--A recipient of funds requesting or using the cost and rate data described in subparagraph (E) shall notify any affected firm before such request or use. Such data shall be confidential and shall not be accessible or provided, in whole or in part, to another firm or to any government agency which is not part of the group of agencies sharing cost data under this paragraph, except by written permission of the audited firm. If prohibited by law, such cost and rate data shall not be disclosed under any circumstances.

(G) State option.--Subparagraphs (C), (D), (E), and (F) shall take effect 1 year after the date of the enactment of this subparagraph; except that if a State, during such 1-year period, adopts by statute an alternative process intended to promote engineering and design quality and ensure maximum competition by professional companies of all sizes providing engineering and design services, such subparagraphs shall not apply with respect to the State. If the Secretary determines that the legislature of the State did not convene and adjourn a full regular session during such 1-year period, the Secretary may extend such 1-year period until the adjournment of the next regular session of the legislature.

(c) The Secretary shall require as a condition precedent to his approval of each contract awarded by competitive bidding pursuant to subsection (b) of this section, and subject to the provisions of this section, a sworn statement, executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract.

(d) No contract awarded by competitive bidding pursuant to subsection (b) of this section, and subject to the provisions of this section, shall be entered into by any State transportation department or local subdivision of the State without compliance with the provisions of this section, and without the prior concurrence of the Secretary in the award thereof.

(e) Standardized Contract Clause Concerning Site Conditions.--

(1) General rule.--The Secretary shall issue regulations establishing and requiring, for inclusion in each contract entered into with respect to any project approved under section 106 of this title a contract clause, developed in accordance with guidelines established by the Secretary, which equitably addresses each of the following:

(A) Site conditions.

(B) Suspensions of work ordered by the State (other than a suspension of work caused by the fault of the contractor or by weather).

(C) Material changes in the scope of work specified in the contract.

The guidelines established by the Secretary shall not require arbitration.

(2) Limitation on applicability.--Paragraph (1) shall apply in a State except to the extent that such State adopts or has adopted by statute a formal procedure for the development of a contract clause described in paragraph (1) or adopts or has adopted a statute which does not permit inclusion of such a contract clause.

(f) The provisions of this section shall not be applicable to contracts for projects on the Federal-aid secondary system in those States where the Secretary has discharged his responsibility pursuant to section 117 \1\ of this title, except where employees of a political subdivision of a State are working on a project outside of such political subdivision.

\1\ See References in Text note below.

(g) Selection Process.--A State may procure, under a single contract, the services of a consultant to prepare any environmental impact assessments or analyses required for a project, including environmental impact statements, as well as subsequent engineering and design work on the project if the State conducts a review that assesses the objectivity of the environmental assessment, environmental analysis, or environmental impact statement prior to its submission to the Secretary.

(Pub. L. 85-767, Aug. 27, 1958, 72 Stat. 895; Pub. L. 90-495, Sec. 22(c), Aug. 23, 1968, 82 Stat. 827; Pub. L. 96-470, title I, Sec. 112(b)(1), Oct. 19, 1980, 94 Stat. 2239; Pub. L. 97-424, title I, Sec. 112, Jan. 6, 1983, 96 Stat. 2106; Pub. L. 100-17, title I, Sec. 111, Apr. 2, 1987, 101 Stat. 147; Pub. L. 104-59, title III, Sec. 307(a), Nov. 28, 1995, 109 Stat. 581; Pub. L. 105-178, title I, Secs. 1205, 1212(a)(2)(A)(i), 1307(a), (b), June 9, 1998, 112 Stat. 184, 193, 229, 230.)

Amendment of Section

Pub. L. 105-178, title I, Sec. 1307(a), (b), (e), June 9, 1998, 112 Stat. 229-231, provided that, effective 3 years after June 9, 1998, this section is amended as follows:

(1) Subsection (b) of this section is amended--

(A) In the first sentence of paragraph (1) by striking ``paragraph (2)" and inserting ``paragraphs (2) and (3)".

(B) In paragraph (2)(A) by striking ``Each" and inserting ``Subject to paragraph (3), each".

(C) By adding at the end the following:

(3) Design-build contracting.--

(A) In general.--A State transportation department or local transportation agency may award a design-build contract for a qualified project described in subparagraph (C) using any procurement process permitted by applicable State and local law.

(B) Limitation on final design.--Final design under a design-build contract referred to in subparagraph (A) shall not commence before compliance with section 102 of the National Environmental Policy Act of 1969 (42 U.S.C. 4332).

(C) Qualified projects.--A qualified project referred to in subparagraph (A) is a project under this chapter for which--

(i) the Secretary has approved the use of design-build contracting described in subparagraph (A) under criteria specified in regulations issued by the Secretary; and

(ii) the total costs are estimated to exceed--

(I) in the case of a project that involves installation of an intelligent transportation system, \$5,000,000; and

(II) in the case of any other project, \$50,000,000.

(D) Design-build contract defined.--In this paragraph, the term ``design-build contract" means an agreement that provides for design and construction of a project by a contractor, regardless of whether the agreement is in the form of a design-build contract, a franchise agreement, or any other form of contract approved by the Secretary.

(2) Subsection (e)(2) of this section is amended--

(A) By striking ``Paragraph" and inserting the following:

``(A) State law.--Paragraph".

(B) By adding at the end the following:

(B) Design-build contracts.--Paragraph (1) shall not apply to any design-build contract approved under subsection (b)(3).

(C) By aligning the remainder of the text of subparagraph (A) (as designated by paragraph (1) of this subsection) with subparagraph (B) of such section (as added by paragraph (2) of this subsection).

References in Text

The Federal Property and Administrative Services Act of 1949, referred to in subsec. (b)(2)(A), is act June 30, 1949, ch. 288, 63 Stat. 377, as amended. Title IX of the Federal Property and Administrative Services Act is classified generally to subchapter VI (Sec. 541 et seq.) of chapter 10 of Title 40, Public Buildings, Property, and Works. For complete classification of this Act to the Code, see Short Title note set out under section 471 of Title 40 and Tables.

The date of the enactment of this paragraph, referred to in subsec. (b)(2)(B), is the date of enactment of Pub. L. 100-17, which was approved Apr. 2, 1987.

The date of the enactment of this subparagraph, referred to in subsec. (b)(2)(G), is the date of enactment of Pub. L. 104-59, which was approved Nov. 28, 1995.

Section 117 of this title, referred to in subsec. (f), relating to certification acceptance, was repealed and a new section 117, relating to high priority projects program, was enacted by Pub. L. 105-178, title I, Sec. 1601(a), June 9, 1998, 112 Stat. 255.

Amendments

1998--Subsecs. (a), (b)(1). Pub. L. 105-178, Sec. 1212(a)(2)(A)(i), substituted ``State transportation department" for ``State highway department".

Subsec. (b)(2)(B)(i). Pub. L. 105-178, Sec. 1205(a), struck out before period at end ``, except to the extent that such State adopts by statute a formal procedure for the procurement of such services".

Subsec. (b)(2)(B)(ii). Pub. L. 105-178, Sec. 1205(a), struck out before period at end ``, except to the extent that such State adopts or has adopted by statute a formal procedure for the procurement of the services described in subparagraph (A)".

Subsec. (d). Pub. L. 105-178, Sec. 1212(a)(2)(A)(i), substituted ``State transportation department" for ``State highway department".

Subsec. (g). Pub. L. 105-178, Sec. 1205(b), added subsec. (g). 1995--Subsec. (b)(2)(C) to (G). Pub. L. 104-59 added subpars. (C) to (G).

1987--Subsec. (b). Pub. L. 100-17, Sec. 111(a), (b), (d), inserted subsec. heading, designated existing provisions as par. (1), inserted par. (1) heading, substituted ``Subject to paragraph (2), construction" for ``Construction" and inserted ``or that an emergency exists", added par. (2), and realigned margins.

Subsecs. (e), (f). Pub. L. 100-17, Sec. 111(c), added subsec. (e) and redesignated former subsec. (e) as (f).

1983--Subsec. (b). Pub. L. 97-424, Sec. 112(1), substituted ``unless the State highway department demonstrates, to the satisfaction of the Secretary, that some other method is more cost effective" for ``unless the Secretary shall affirmatively find that, under the circumstances relating to such project, some other method is in the public interest"

after ``by competitive bidding,".

Subsec. (e). Pub. L. 97-424, Sec. 112(2), inserted exception relating to a situation where employees of a political subdivision of a State are working on a project outside of such political subdivision.

1980--Subsec. (b). Pub. L. 96-470 struck out provision that all findings by the Secretary that a method other than competitive bidding is in the public interest be reported in writing to the Committees on Public Works of the Senate and the House of Representatives.

1968--Subsec. (b). Pub. L. 90-495 required that contracts for the construction of each project be awarded only on the basis of the lowest responsive bid by a bidder meeting established criteria of responsibility and required that, to be imposed as a condition precedent, requirements and obligations have been specifically set forth in the advertised specifications.

Effective Date of 1998 Amendment

Pub. L. 105-178, title I, Sec. 1307(e), June 9, 1998, 112 Stat. 231, provided that:

``(1) In general.--The amendments made by this section [amending this section] take effect 3 years after the date of enactment of this Act [June 9, 1998].

``(2) Transition provision.--

``(A) In general.--During the period before issuance of the regulations under subsection (c) [set out below], the Secretary may approve, in accordance with an experimental program described in subsection (d) [set out below], design-build contracts to be awarded using any process permitted by applicable State and local law; except that final design under any such contract shall not commence before compliance with section 102 of the National Environmental Policy Act of 1969 (42 U.S.C. 4332).

``(B) Previously awarded contracts.--The Secretary may approve design-build contracts awarded before the date of enactment of this Act.

``(C) Design-build contract defined.--In this paragraph, the term `design-build contract' means an agreement that provides for design and construction of a project by a contractor, regardless of whether the agreement is in the form of a design-build contract, a franchise agreement, or any other form of contract approved by the Secretary."

Effective Date of 1968 Amendment

Amendment by Pub. L. 90-495 effective Aug. 23, 1968, see section 37 of Pub. L. 90-495, set out as a note under section 101 of this title.

Regulations

Pub. L. 105-178, title I, Sec. 1307(c), June 9, 1998, 112 Stat. 230, provided that:

``(1) In general.--Not later than the effective date specified in subsection (e) [see Effective Date of 1998 Amendment note above], after consultation with the America

Association of State Highway and Transportation Officials and representatives from affected industries, the Secretary shall issue regulations to carry out the amendments made by this section [amending this section].

“(2) Contents.--The regulations shall--

“(A) identify the criteria to be used by the Secretary in approving the use by a State transportation department or local transportation agency of design-build contracting; and

“(B) establish the procedures to be followed by a State transportation department or local transportation agency for obtaining the Secretary's approval of the use of design-build contracting by the department or agency.”

Effect on Experimental Program

Pub. L. 105-178, title I, Sec. 1307(d), June 9, 1998, 112 Stat. 231, provided that:

“Nothing in this section [amending this section and enacting provisions set out as notes under this section] or the amendments made by this section affects the authority to carry out, or any project carried out under, any experimental program concerning design-build contracting that is being carried out by the Secretary as of the date of enactment of this Act [June 9, 1998].”

Report to Congress

Pub. L. 105-178, title I, Sec. 1307(f), June 9, 1998, 112 Stat. 231, provided that:

“(1) In general.--Not later than 5 years after the date of enactment of this Act [June 9, 1998], the Secretary shall submit to Congress a report on the effectiveness of design-build contracting procedures.

“(2) Contents.--The report shall contain--

“(A) an assessment of the effect of design-build contracting on project quality, project cost, and timeliness of project delivery;

“(B) recommendations on the appropriate level of design for design-build procurements;

“(C) an assessment of the impact of design-build contracting on small businesses;

“(D) assessment of the subjectivity used in design-build contracting; and

“(E) such recommendations concerning design-build contracting procedures as the Secretary determines to be appropriate.”

Private Sector Involvement Program

Pub. L. 102-240, title I, Sec. 1060, Dec. 18, 1991, 105 Stat. 2003, provided that:

“(a) Establishment.--The Secretary shall establish a private sector involvement program to encourage States to contract with private firms for engineering and design services in carrying out Federal-aid highway projects when it would be cost effective.

“(b) Grants to States.--

“(1) In general.--In conducting the program under this section, the Secretary may make grants in each of fiscal years 1992, 1993, 1994, 1995, 1996, and 1997 to not less than 3 States which the Secretary determines have implemented in the fiscal year preceding the fiscal year of the grant the most effective programs for increasing the percentage of funds expended for contracting with private firms (including small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals) for engineering and design services in carrying out Federal-aid highway projects.

“(2) Use of grants.--A grant received by a State under this subsection may be used by the State only for awarding contracts for engineering and design services to carry out projects and activities for which Federal funds may be obligated under title 23, United States Code.

“(3) Funding.--There are authorized to be appropriated to carry out this section \$5,000,000 for each of fiscal years 1992 through 1997. Such sums shall remain available until expended.

“(c) Report by FHWA.--Not later than 120 days after the date of the enactment of this Act [Dec. 18, 1991], the Administrator of the Federal Highway Administration shall submit to the Secretary a report on the amount of funds expended by each State in fiscal years 1980 through 1990 on contracts with private sector engineering and design firms in carrying out Federal-aid highway projects. The Secretary shall use information in the report to evaluate State engineering and design programs for the purpose of awarding grants under subsection (b).

“(d) Report to Congress.--Not later than 2 years after the date of the enactment of this Act [Dec. 18, 1991], the Secretary shall transmit to Congress a report on implementation of the program established under this section.

“(e) Engineering and Design Services Defined.--The term ‘engineering and design services’ means any category of service described in section 112(b) of title 23, United States Code.

“(f) Regulations.--Not later than 180 days after the date of the enactment of this Act [Dec. 18, 1991], the Secretary shall issue regulations to carry out this section.”

Pilot Program for Uniform Audit Procedures

Pub. L. 102-240, title I, Sec. 1092, Dec. 18, 1991, 105 Stat. 2024, directed Secretary to establish pilot program to include no more than 10 States under which any contract or subcontract awarded in accordance with subsec. (b)(2)(A) of this section was to be performed and audited in compliance with cost principles contained in Federal acquisition regulations of part 41 of title 48 of Code of Federal Regulations, provided for indirect cost rates in lieu of performing audits, and required each State participating in pilot program to report to Secretary not later than 3 years after Dec. 18, 1991, on results of program, prior to repeal by Pub. L. 104-59, title III, Sec. 307(b), Nov. 28, 1995, 109 Stat. 582. See subsec. (b)(2)(C) to (F) of this section.

Evaluation of State Procurement Practices

Pub. L. 102-240, title VI, Sec. 6014, Dec. 18, 1991, 105 Stat. 2181, directed Secretary to conduct a study to evaluate whether or not current procurement practices of State departments and agencies were adequate to ensure that highway and transit systems were designed, constructed, and maintained so as to achieve a high quality for such systems at the lowest overall cost and, not later than 2 years after Dec. 18, 1991, to transmit to Congress a report on the results of the study, together with an assessment of the need for establishing a national policy on transportation quality assurance and recommendations for appropriate legislative and administrative actions.

Section Referred to in Other Sections

This section is referred to in section 210 of this title; title 49 section 5325.

10.0 APPENDIX B

SEP-14 Applications on a National Level

SEP-14 Applications on a National Level

A number of FHWA SEP-14 activities are underway by a growing number of state highway agencies that are using and evaluating promising innovative contracting practices¹.

Cost-Plus-Time Bidding

Cost-plus-time bidding, more commonly referred to as the A+B method, involves time, with an associated cost, in the low bid determination. The “A” component is the traditional bid for the contract items and is the dollar amount for all work to be performed under the contract. The “B” component is a “bid” of the total number of calendar days required to complete the project as estimated by the bidder.

Under SEP-14, 27 states and Washington, D.C. have used the A+B method. After a five-year evaluation period, A+B bidding was declared operational and is no longer considered to be experimental. Since that time a total of 38 states and Washington, D.C. have used this method. States that have used A+B have generally reported good results. Contract times have been reduced, costs have been acceptable and quality has been maintained.

Lane Rental

Like cost-plus-time bidding, the goal of the lane rental concept is to encourage contractors to minimize road user impacts during construction. Under the lane rental concept, a provision for a rental fee assessment is included in the contract. The lane rental fee is based on estimated cost of delay or inconvenience to the road user during the rental period. The fee is assessed for the time that the contractor occupies or obstructs part of the roadway and is deducted from the monthly progress payments.

Under SEP-14, five states evaluated the lane rental technique. After a five-year evaluation period, the lane rental technique was declared operational and is no longer considered to be experimental. Since that time, a total of seven states have used this method. These states have reported favorable results.

Design-Build

The design-build concept allows the contractor maximum flexibility for innovation in the selection of design, materials and construction methods. With design-build procurement, the contracting agency identifies the end result parameters and establishes the design criteria. The prospective bidders then develop design proposals that optimize their construction abilities. The submitted proposals may be rated by the contracting agency on factors such as design quality, timeliness, management capability

¹ Federal Highway Administration. *FHWA Initiatives to Encourage Quality Through Innovative Contracting Practices Special Experimental Projects No. 14 – (SEP-14)*. October 1998. Online. Available: http://www.fhwa.dot.gov/engineering/hng20/hng22/sep_a.html.

and cost and these factors may be used to adjust the bids for the purpose of awarding the contract.

Under SEP-14, 20 states and Washington, D.C. have design-build projects approved or underway. FHWA will continue evaluation and approval procedures for design-build under SEP-14 and will report on the effectiveness of it within five years of the date of enactment.

Warranty

Warranties have been successfully used, in other countries and by some states on non-Federal projects, to protect investments from early failure. Prior to 1991, the FHWA had a longstanding policy that restricted the use of warranties on Federal-aid projects to only electrical and mechanical equipment. In 1991, the Intermodal Surface Transportation Efficiency Act permitted a state to be exempted from FHWA oversight for Federal-aid projects located off the National Highway System. In 1995, FHWA published an Interim Final Rule (IFR) for warranties for projects on the National Highway System. The IFR includes language that indicates that warranty provisions shall be for a specific construction product or feature. Routine maintenance items are still not eligible nor are items outside the control of the contractor.

Prior to the rule makings, eight states participated in the evaluation of warranties under SEP-14. Since the implementation of the warranty regulation in 1995, FHWA no longer requires the evaluation of warranties.

Other Concept Approvals

Michigan and some municipalities are currently using an innovative contracting method described as “indefinite quantity/indefinite delivery”. Under this method, contractors bid on unit work items with the location to be determined under future work orders. An estimate of the total work over the life of the contract is provided in each contract.

Missouri has been approved for their request for an alternate paving bidding procedure. Traditionally, the FHWA has discouraged alternate pavement bids; however, Missouri actively involved the paving industry in developing alternate pavement type specifications and bid adjustment factors. Missouri will evaluate this bidding process to see if the alternate bidding process is effective.

Missouri has also been approved for their request for seismic isolation system procurement. The proposal provides a new approach to the traditional method of selecting bridge seismic retrofit systems. This method of procurement will provide a system that is competitively bid and includes life cycle costs.

Florida was approved to use the No Excuses Bonus method that gives the contractor a “drop-dead date” for completion of a phase or project. If the work is

completed in advance of this date, the contractor will receive a bonus. There are no excuses for any reason such as weather delays. On the other hand, there are no disincentives for not meeting the completion date. This technique has applicability to projects that must be open to meet a critical date.

Florida also received approval to use lump sum bidding concepts on Federal-aid projects. The contractor will be provided with a set of bid documents and will be required to calculate quantities and develop a lump sum bid for all work.

Oregon received approval for a price/qualifications-based bidding method. The contract was awarded on the basis of the highest composite score considering both price information and technical criteria.

Kentucky is using constructability reviews. The proposed concept is not design/build but rather a process whereby contractors interested in bidding any of the contracts involved with the project must pre-qualify at the beginning of the project and then participate in a constructability exercise to finalize the project design. When the project contracts are advertised, only the contractors who have been pre-qualified and have participated in the constructability exercise are permitted to bid. Each contract will be awarded on the basis of the lowest competitive bid.

Colorado is developing a system integrator contract to design/build, coordinate, operate and maintain the Colorado Transportation Management System. Colorado may use a best value award method for the contract or subcontract. Colorado and FHWA realize that there will be certain ITS functions that will be logically let by the subcontract to the system integrator contract.

New Mexico is proceeding with a project that will provide for a public-private partnership program. A project development contractor (PDC) was hired to provide detailed design, construction management services and a warranty for key project elements. The PDC was also given project administrative authority including progress payments. This will be the first time that a consultant will have the authority to make and withhold progress payments on a Federal-aid project. The administrative authority is necessary in order to make the warranty provisions effective.

11.0 APPENDIX C

System Integration Contracting Procedures

TRAFFIC RESPONSE AND INCIDENT MANAGEMENT ASSISTING
THE RIVER CITIES (TRIMARC)

SYSTEM INTEGRATION CONTRACTING PROCEDURES
SPECIAL EXPERIMENTAL PROJECT NO. 14

TRIMARC began in 1992 when FHWA awarded the Kentucky Transportation Cabinet (KYTC) \$250,000 in ITS Funds for an Early Deployment Study to develop an incident management program for I-65 in Louisville and Southern Indiana. The study was completed in 1994. In April of 1996, a design contract was signed with TRW, Inc. This work is complete and an installation procurement package is essentially ready to request bids. Shortly after design was initiated, TRW submitted an unsolicited proposal to privatize the installation and operation of the project. The KYTC does not have procedures for accepting unsolicited proposals and a RFP was issued. TRW was the only responder and signing of an Agreement which includes the provision for TRW to contract for equipment installation is imminent.

TRIMARC currently is an ATMS project. It could eventually be expanded to add ATIS Service.

A FHWA memorandum, dated May 1, 1997, from Messrs. Ptak and Judycki, subject: "Procurement Information for ITS Projects" has an attachment which discusses various types of ITS-type implementation approaches which must be approved utilizing the SEP-14 process. One such approach is the System Integrator method.

The KYTC has implemented two major ITS-type projects where the term "System Integrator" was used but the approach was more like a System Manager. Several lessons have been learned from these projects. Those which relate to the proposed implementation approach for TRIMARC are:

- ◆ Traditional low-bid procurement is not appropriate for most ITS-type projects. ADVANTAGE 1-75 used an approach similar to South Carolina's "Highest Composite Score". The ARTIMIS project in Cincinnati/Northern Kentucky was basically a System's Manager approach coordinating the work of four low-bid contractors. While both approaches worked better than traditional methods, both led to conflicts, delays, extra work, and claims.
- ◆ There cannot be a "system integrator" unless there is control over equipment.
- ◆ It is extremely desirable to reduce the potential for conflicts and "finger-pointing". ARTIMIS had three independent, low-bid contractors working at the same time. Each contractor did work to fit their own schedule and there has been extensive finger-pointing, claims, counter-claims, and delays.
- ◆ The KYTC does not have the expertise for system integration to be performed "in-house".
- ◆ Projects like TRIMARC need flexibility in procurement procedures.
- ◆ Reciprocity procurements wherein the selected vendor agrees to purchase goods and/or services from the procuring entity should not be allowed. An ARTIMIS contractor purchased equipment from a vendor under a reciprocity agreement that had many problems and required undue integration and testing efforts.

As a result of the above lessons learned and in the interest of accelerating the TRIMARC project, the KYTC proposes to modify the equipment procurement process. Specifics follow:

TRW will solicit proposals for the roadway installation of TRIMARC equipment from KYTC and INDOT pre-qualified contractors. A detailed bid package has been prepared for KYTC by TRW under a separate contract. The bid package includes general and special terms and conditions; evaluation criteria; detailed specifications for the electronics (e.g. variable message signs, cameras, detectors, etc.); plan sheets detailing the installation requirements (e.g. foundations, locations, wiring diagrams, etc.) and a price sheet with the elements of the bid and the estimated quantities. All bidders will be required to submit (1) their unit prices and extended price for each

line item, (2) a project schedule which shows any differences from the master project schedule, (3) related experience and past performance data, and (4) data sheets for all electronic components and lowering system poles.

The following process will be followed:

1. All bids will be received by TRW by __a.m. EST on January __, 1998. Any bids received after the deadline will be returned to the bidder unopened.
2. Bids will be opened in confidence by TRW and the total bid prices will be known only by the TRW Source Selection Committee and representatives of KYTC, INDOT, and FHWA. The Source Selection Committee will consist of the TRIMARC Project Engineer, a TRW contracts representative, and the TRW Director of Transportation. Additional technical assistance in evaluating and scoring the proposals may be solicited from the project team. The KYTC, INDOT, and FHWA Bidding/Oversight Committee (described later) will be present and monitor all actions of the TRW Source Selection Committee.
3. All proposals will be evaluated for responsiveness to the bid instructions and technical compliance. This will involve comparing the data sheets provided with the bid specifications. Failure to comply or failure to demonstrate compliance to a specification will be considered a "deficiency". In areas where there is uncertainty in compliance or a conflict in the proposed items specifications, a "clarification" request will be generated.
4. TRW will evaluate the pricing submitted by the bidder for correctness (extended price and total price). TRW will follow the Kentucky requirement that unit pricing prevails. TRW will conduct an analysis of the pricing for reasonableness. If there are cases where a unit price for an item is significantly out of line with the Engineer's estimate, a "clarification" request will be generated.
5. TRW will evaluate the experience and past performance provided by the bidders to ascertain their respective level of relevant experience, i.e. have they (or their team) installed variable message signs, cameras, detectors, highway advisory radios, etc. TRW will also contact a minimum of two references to establish past performance scoring. The Bidder's ability to meet schedule and remain in budget are key elements of this evaluation. Safety, liquidated damages, maintenance of traffic plans, and cooperation are additional elements to be factored in the scoring.
6. TRW will review submitted proposed schedules for reasonableness and impact on construction inspection and engineering. Longer schedules will impact the overall cost to the States by requiring additional inspection. Likewise, abbreviated schedules may reflect a bidder's lack of understanding of what is required. Questions arising from this analysis will result in requests for "clarifications".
7. After this first round of evaluation (steps 2 through 6), deficiency reports and clarification requests will simultaneously be issued to each bidder as necessary. The bidders will have 7 days to submit a "best and final" offer to TRW.
8. TRW will review the best and final offers and any offer that is still non-responsive will be rejected.
9. All compliant bids will now be scored in the following three areas listed in their order of importance:
 - A. **COST:** Cost will be scored in the following manner: All bidders start with 100 points. Bids that exceed the Engineer's Estimate will be decremented 1 point for each \$20,000 increment by which their bid is higher. Bids that are less than the Engineer's Estimate will be incremented 1 point for each \$20,000 (or part of \$20,000) increment by which their bid is lower. For example, a bid \$2,000 lower than the Engineer's Estimate would be awarded 1 additional point for a total of 101. A bidder whose proposal is \$15,000 greater than the Engineer's Estimate would have a point deducted for a total of 99. A bidder whose price is \$61,000 higher would have 4 points deducted.

- B. **SCHEDULE:** Schedules (excluding VMS work) will be scored in the following manner: All bidders start with 30 points. Bidders whose schedules exceed the Engineer's Schedule will be decremented 1 point for every week increment by which they exceed. Bidder schedules that are projected to be completed sooner than the Engineer's Schedule will be incremented 1 point for every week increment prior to the Engineer's Schedule completion.
- C. **EXPERIENCE/PAST PERFORMANCE (from Step 5):** This evaluation area will be scored in the following manner: For experience, the bidders will be ranked on their demonstrated work on similar ITS roadway project within the last five years. The bidder with the most experience will be ranked first and receive 10 points. The next most experienced bidder will have 9 points, the next 8 points, and so on. If in the judgment of the evaluators, there is no discernible difference in experience levels of more than one bidder, the same number of points will be awarded to each of the tying bidders. The next ranked bidder would receive only 1 less point. For example, if three bidders tied for the most experience, each would be awarded 10 points. The next most experienced bidder, fourth overall, would receive 9 points. Past performance will be scored much in the same manner as experience. Each bidders past performance will be evaluated on ability to perform on schedule, on budget, and ability to work with its customers on similar type projects within the last 5 years. The bidders will be ranked where the highest ranked (best past performance) will receive 10 points, the next 9 points, and so on. Ties will receive the same points and the next ranked bidder, 1 less point. Points will be totaled from the scoring process and the high point bidder will be the apparent winner that will be recommended to enter final negotiations with TRW for the work.
10. The Source Selection Committee will review the scoring and issue a Source Selection Report documenting the results from the bid analysis and the proposed prices from all bidders. This Report will be provided to KYTC, INDOT, and FHWA with TRW's recommendation. Upon notification from KYTC, TRW will finalize negotiations and issue a subcontract to the winning bidder to perform the installation of the system.

Bidding/Contracting Oversight - An oversight committee will be established to assist TRW with bidding, contract award, and management. This Committee will be composed of the following persons or their representatives:

- ◆ Nancy Albright - KYTC, TRIMARC Program Manager
- ◆ Gene Mason - KYTC, Director of Contract Procurement
- ◆ James Poturalski - Indiana DOT, Traffic Design Manager
- ◆ Dennis Luhrs - FHWA, Kentucky Division Office
- ◆ Paul Toussaint - Director, University of Kentucky Transportation Center

Mr. Toussaint's responsibility will be to prepare the reports described below. Mr. Mason will assist with bidder qualifications, wage rates, required Notices, standard contract provisions, etc.

The current schedule is to award the installation contract in January of 1998 and complete all work by September of 1998.

Reports will be prepared on actual implementation of bidding and installation procedures and will be designed to assist others in use of a true System Integration process. The reports will be prepared by the University of Kentucky Transportation Center. One report will be prepared within 90 days of contract awards, one within 90 days of contract completion, and a final report after two years which will document any effect on TRIMARC Operations that might be due to the contracting procedures.



University of Kentucky
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